

CLAIMS:

1. A headphone element for use by a listener wearing the headphone element or a headphone set including a pair of headphone elements and including:
 - i) a headphone element support to be positioned juxtaposed the outer ear of the listener,
 - ii) a first transducer element supported by the support and including a tube for the transmission of sound generated by the first transducer element therethrough for radiation from an output end of the tube,
 - iii) a porous ear piece for positioning the output end of the tube at the entry of the auditory canal of the ear of the listener for the radiation of sound from the output end of the tube into the auditory canal, the porous ear piece allowing the transmission of sound therethrough without a substantial attenuation of the sound transmission and
 - iv) a second transducer element supported by the support and being positioned for the radiation of sound to the entry into the auditory canal of the listener through the porous ear piece.
2. The headphone element according to claim 1, the first transducer element being constituted by a low frequency reproducing transducer and the second transducer element being constituted by a high frequency reproducing transducer.
3. The headphone element according to claim 1, the first and second transducer elements being constituted by a single transducer, the one side of the transducer constituting the first transducer element and the other side of the transducer constituting the second transducer element.
4. The headphone element according to any of the claims 1-3, the first transducer element being housed within a sealed enclosure allowing the radiation from the one side of the first transducer element to be transmitted through the tube.

5. The headphone element according to claim 4, the headphone element support being constituted by the sealed enclosure.
6. The headphone element according to any of the claims 1-4, the headphone element support constituting an acoustically open structure allowing the second transducer element to acoustically communicate with the surroundings.
7. The headphone element according to any of the claims 1-4, the headphone element constituting a closed housing in which the first and second transducer elements are supported and seal-off the interior of the housing from the surroundings.
8. The headphone element according to any of the claims 1-7, further including a porous plug terminating the tube at the output end thereof for providing a semi-open tube.
9. The headphone element according to any of the claims 1, 2, 4-8, the first transducer element having a first pair of electrical input terminals being connected through the first set of electrical input terminals to an electrical low pass filter, and the second transducer element having a second pair of electrical input terminals being connected through the second set of electrical input terminals to an electrical high pass filter.
10. The headphone element according to any of the claims 1-9, the porous ear piece being configured for the insertion into the entry of the auditory canal of the ear of the listener.
11. The headphone element according to any of the claims 1-9, the porous ear piece being configured for positioning the output end of the tube at the entry of the auditory canal of the listener.
12. The headphone element according to any of the claims 1-11, the first transducer element and the second transducer element together providing within the auditory canal of the listener an audio frequency response extending from below 100 Hz to above 10 kHz (- 3dB frequencies), preferably from below 50 Hz, further preferably below 30 Hz to above preferably 15 kHz, further preferably above 20 kHz.

13. A headphone set including a pair of headphone elements having any of the features of the claims 1-12.